DOCUMENT RESUME

ED 025 458 SP 001 928

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Video Processes in Teacher Education Programs: Scope, Techniques, and Assessment. Multi-State Teacher Education Project, Monograph III.

Multi-State Teacher Education Project, Baltimore, Md.

Spons Agency- Multi-State Teacher Education Project, Baltimore, Md.

Pub Date Sep 68

Note- 34p.

Available from- M-STEP Central Office, 1101 St. Paul St., Baltimore, Maryland 21202 (free).

EDRS Price MF-$0.25 HC-$1.80

Descriptors- *Audiovisual Instruction, Critical Incidents Method, Equipment, Facilities, Films, Instructional Materials, *Microteaching, *Program Descriptions, Repetitive Film Showings, Simulation, *Teacher Education, Teacher Experience, Teaching Procedures, Teaching Skills, Training Techniques, *Video Tape Recordings

Identifiers- Brigham Young University, M STEP, Multi State Teacher Education Program, South Carolina, Utah

"Video Processes Are Changing Teacher Education" by Howard Bosley (the first of five papers comprising this document) discusses the Multi-State Teacher Education Project (M-STEP) experimentation with media; it lists various uses of video processes, concentrating specifically on microteaching and the use of simulation and critical incidents materials. A paper by Clark Webb and others of Brigham Young University describes a large-scale microteaching program, depicting a typical session and discussing equipment, facilities, logistics, and evaluation. A companion paper by Clark Webb and Hugh Baird presents the results of "a limited investigation into the potential of a super 8mm cartridge film for brief (3-10 minute) model teaching episodes." Attached are lists of approximate costs of selected pieces of equipment and of representative processes and manufacturing companies. "Developing a State's Resources for Television in Teacher Education" by G.W. Hopkins reports the South Carolina M-STEP program's problems, organizational structure, and progress; it includes a list of tapes and accompanying study guides (plus corollary publications) prepared for use in that program and "available for use." In the final paper Bosley presents "An Appraisal" of various video processes as viewed by participants in the M-STEP experiment. (JS)

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VIDEO PROCESSES IN TEACHER EDUCATION PROGRAMS

Scope, Techniques, and Assessment

ED025458

one of a series of M-STEP publications

ED025458

SP001928

VIDEO PROCESSES

IN

TEACHER EDUCATION PROGRAMS

Scope, Techniques, and Assessment

Multi-State Teacher Education Project
Baltimore, Maryland 21202

Howard E. Bosley, Director

September, 1968

SP001928

PURPOSE
OF THE
MULTI-STATE TEACHER EDUCATION PROJECT

"To strengthen the capacity of state departments of education to provide leadership in the development of joint responsibility between local education agencies and teacher education institutions in the preparation of professional personnel, with emphasis on laboratory experiences in elementary and secondary schools.

"The compact states have been brought together by a mutual concern for strengthening teacher education and a desire simultaneously to widen their leadership roles in their respective states. The multi-state nature of the proposed project is an innovation. By pooling resources and cooperating in pilot programs, it is hoped that a new dimension in the potential of state departments of education will emerge."

(Quoted from original Application to the United States Commissioner of Education, February 25, 1966)

The Multi-State Teacher Education Project proposal was approved by the United States Commissioner of Education on March 10, 1966. The project is federally funded under Section 505, Title V, Public Law 89-10 (Elementary and Secondary Education Act of 1965).

INTRODUCTION

There is reason for thinking that emphasis should be placed on several aspects of video processes in teacher education. Paramount among these are:

Broadening the scope of media utilization
Defining techniques and applications
Appraising the effectiveness of media in learning situations.

In this monograph broader application of television-related techniques is suggested by the section which describes a state's efforts to increase the use of this medium and by a paper presented at an annual conference of a national organization. Specific techniques in micro-teaching are described in papers presented by Webb, Baird, Belt, and Holder, who also treat evaluation. The appraisal of video processes is treated briefly in the final paper, as viewed by participants in the M–STEP experiment.

H. E. B.

CONTENTS

Title **Page**

Video Processes Are Changing Teacher Education. 1

- M–STEP experimentation with media
- Sharpening the processes of concept building
- Multiplicity of uses of video processes
- Micro-teaching as an experience in controlled learning
- The use of simulation and critical incidents materials
- More learning in less time
- Sharpening our foci on the basic components of good teaching
- Creativity versus imi tation

Description of a Large-Scale Micro-Teaching Program 7

- Typical session
- Equipment, facilities, and logistics
- Evaluation of effectiveness of program
- Conclusion

Super 8mm Cartridge Format for Teaching Episodes 14

- About formats
- Processes and equipment
- Summary

Developing a State's Resources for Television in Teacher Education. 18

- Problems of South Carolina M–STEP
- Conditions essential for success
- M–STEP committees
- The structure of South Carolina M–STEP
- South Carolina M–STEP utilizes diverse processes to carry out its objectives
- South Carolina M–STEP produces resources for teacher education programs
- Handbook for student teaching
- Multi-state teacher education project television resources
- Corollary publications

An Appraisal 24

- Teacher educators speak
- Utah's evaluation session
- Institutional research

VIDEO PROCESSES
ARE
CHANGING
TEACHER EDUCATION*

The Multi-State Teacher Education Project, more frequently known by the acronym M–STEP, was officially approved by the U.S. Commissioner of Education in March of 1966. The project includes the states of Florida, Maryland, Michigan, South Carolina, Utah, Washington, and West Virginia. Its two major goals were to experiment with innovative procedures in laboratory experiences and to carry forward intensive exploration concerning the uses of television and related media in teacher education.

Concurrently with early development of the major product goals, two additional process goals assumed significant means-to-an-end proportions. The third objective concerned the development of statewide committees and systems for studying innovative processes in teacher education and for implementing agreed-upon experimentation within the states. A fourth objective has involved the use of effective ways for enabling a group of states to move toward project goals, on the hypothesis that several states working together can collectively rise to greater heights in less time than individual states working alone.

The current paper deals with the project goal which leads to the exploration of new functions for television and video processes in teacher education.

M–STEP EXPERIMENTATION WITH MEDIA

Intrinsically, the M–STEP project was committed to the tasks of:

1. Learning what was being done in adapting video media to programs of teacher preparation in American colleges and universities, along with empirical or research-based appraisal of its effectiveness.
2. Participating in a search for unique and significant contributions which video processes can make to unmet needs in teacher education of which the profession is aware or about which awareness may develop.
3. Creating, using, and evaluating sets or series of videotapes and films of exemplary teaching patterns. These included applications such as the 8mm sound film repeater loop cartridge, random access tapes and equipment, and, ultimately, dial access systems and forms of video bank installations.

As the M–STEP staff viewed the national scene in 1965–66, television and its associated forms seemed to be taking mass media directions more frequently than assuming individualized applications. States were being blanketed with systems of educational television, and video recordings were being shown to college classes in much the same way that the educational sound film had been used in an earlier period.

*Presented at Annual Convention, National Education Association, Department of Audiovisual Instruction, Houston, Texas, March, 1968, by Dr. Howard E. Bosley, Director, Multi-State Teacher Education Project.

It is true, however, that in dozens of institutions stimulating beginnings had been made in finding innovative uses for video media in teacher education programs, especially after portable videotape recorders had begun to appear on the scene. In many instances the new devices were seen to offer direct use functions which met felt needs of long standing.

It is especially notable that the immediate playback feature of the videotape recorder, as opposed to the weeks later playback possibilities inherent in sound film applications, presented intriguing possibilities for use in laboratory experience classrooms. Student teachers and interns were benefited immeasurably by the "mirror image" which the device permitted for self-criticism. Supervising teachers, college supervisors, and supervising faculty were provided objectively-based, "on the screen" action patterns which were highly useful in the cooperative student-supervisor diagnosis of individual strengths and weaknesses of student teachers and interns. Where desirable, "before and after" visual records were being produced, showing progress made by the beginning teacher over a period of time. Thus persisting weaknesses and developing strengths in teaching were portrayed, with all the vividness of reality, on a television screen as need arose or for long-term reviews of a useful type never before practicable.

SHARPENING THE PROCESSES OF CONCEPT BUILDING

The ease with which a videotape can be prepared, viewed, and revised, especially through the use of an easily adapted "studio" set up in a small space somewhere about the campus, caused the new visual recording medium to be well adapted to use by college professors who were in need of illustrative aspects of vital phases of the teaching process for use with college classes. Ingenious individuals on college faculties have even devised relatively inexpensive and compact movable "studio" arrangements in the form of cabinets which house a small camera, a small videotape recorder, monitor, lights, and associated equipment. Commercially produced equipment of this nature is also available.

With this equipment, selected classroom episodes can be made available, and libraries of similar materials can be accumulated. A feed-back or group prognosis possibility exists, which could affect the content of college courses. Video records of student teaching performances should lend visibility to common patterns of needed emphasis among students involved in the early stages of teaching. Corrective potential which should result from this added visibility of common shortcomings -- and significant strengths as well -- could range from deficiencies in the use of English expression to revelations of weak spots in the processes of concept building which college teachers of professional education courses may heretofore have considered well developed.

As a substitute for classroom observation, advantages of the videotape are probably too obvious to need mention. Rapid enrollment growth is rendering direct classroom observation increasingly difficult, and observations by videotape are more effective than direct observations for these reasons:

1. Preparation can be controlled for explicit portrayal of desired teaching objectives.
2. Videotape showing can be stopped, or even reversed and replayed, when questions occur or other needs for reinforcement become apparent in the class.

3. Videotaped observations can be selected for quality and stored for repeated use.

MULTIPLICITY OF USES OF VIDEO PROCESSES

The suggestion is hereby submitted, if it has not already been implied, that a broad scope of overall potential should be kept in mind by those who are utilizing video media in teacher education. Our inventiveness should not be confined to narrow channels.

At least five significant uses of video process have been implied in the above comments. They are:

1. A flexible substitute for classroom observation
2. A useful source of self-appraisal for student teachers
3. A means of providing instruction in the skills and techniques inherent in the teaching processes, especially via single-concept videotapes and related aids
4. Recording and evaluating the progress of student teaching, aimed especially toward inducing individual professional growth from analyses of long-term patterns of teaching behavior, as opposed to sole reliance on the usual fragmentary and short-term review-critique process
5. Preservation of original data for later analysis and research, e.g. the accumulation of evidences of common strengths and weaknesses of student groups.

As guides for curriculum replanning, additional uses will be discussed below.

MICRO-TEACHING AS AN EXPERIENCE IN CONTROLLED LEARNING

From the "mirror image," self-appraisal process which the portable video recorder makes possible for the student teacher, the step to micro-teaching is a natural one. This process is defined by Baird and Belt[1] as a "miniature teaching situation under controlled conditions." The lesson is short, usually not longer than five or six minutes, and, very significantly, will probably deal with only one teaching technique, process, or concept. Though short, it is presented as a complete lesson rather than as a segment of a longer lesson.

The student teacher is usually videotaped while he teaches, and the playback follows immediately. Usually, the replay is critiqued both by the student teacher himself and by his college supervisor or supervising teacher. He may, and probably does, reteach immediately, incorporating changes which he and/or his supervisors and peers have suggested. His "micro-class" may be his peers, or it may be a group of pupils. Inevitably it will be a small group, usually four to six. Possibly the student teacher's micro-class peer group will participate in the critique of his lesson.

Major advantages of micro-teaching include (a) its concentration on one single, manageable, teaching process or concept at one time, (b) the ease of thorough analysis, diagnosis, and suggested remediation, and (c) the opportunities given for immediate reteaching and strengthening of processes discussed during the evaluation period. By means of this process, unique progress can be made toward building a specific teaching skill or pattern into the student teacher's instructional repertoire.

[1]Utah M–STEP, The Use of Video Processes In Teacher Education, Monograph No. 1 (Salt Lake City: Utah State Board of Education, 1967), p. 1.

Micro-teaching can also serve as a means of revealing strengths in an individual's teaching performance. It is not always recognized that further strengthening of those capabilities which are already strong can be a vital facet of career development.

A properly-managed, micro-teaching process almost inevitably develops ingenuity and creativity on the part of students in teacher education programs. In the sheltered confines of a small "micro group," as contrasted with the inflexibility imposed by the typical elementary or high school classroom, experimentation by the student teacher can be encouraged. Open-ended questions to the student, such as "Do you see a better way than the process which you used" or "How could the situation have been managed so that the learning problem might not have occurred" can aid in this process.

THE USE OF SIMULATION AND CRITICAL INCIDENTS MATERIALS

Classroom episodes can be used to similate evolving situations which are significant and inevitable in the teaching process. Because the human individual is a complex and not a predictable organism, there is not always one best way to deal with individual or group problem situations.

Teacher education specialists have long felt the need for new means of producing *decision-bearing situations which would demand judgment on the part of teacher trainees* in advance of their actual occurrence in the classroom.

In essence, the simulation technique (a) portrays on film or videotape the rising tide of a classroom or group situation, (b) provides opportunity for individual reactions, diagnoses, and suggested solutions by students in college classes or in groups, before, during, and following student teaching, and ultimately (c) may be used to depict one or more means whereby the learning or adjustment situation was managed by a skilled teacher.

Significant research at the University of Tennessee resulted in the selection of ten most frequently occurring classroom problem types to which the simulation technique seemed applicable.[2] They were:

1. Dealing with the constantly disrupting child.
2. Handling children's constantly disrupting behavior toward one another.
3. Motivating individual students.
4. Adjusting class work to the rapid learner.
5. Involving large numbers of students in class discussion.
6. Learning to cope with clerical work associated with teaching.
7. Guiding children toward doing independent work with a minimum of disturbance to others.
8. Providing appropriate work for the class while the teacher assists small groups or individual children.
9. Learning to control the student teacher's impatience with students.
10. Dealing with children's reading problems.

Video materials of the "critical-incidents" type were produced by a Kansas City project and are now available.[3]

[2] Donald R. Cruickshank, "Building a Simulated Laboratory for Teacher Preparation," Television and Related Media in Teacher Education, (Baltimore, Maryland: Multi-State Teacher Education Project, 1967), p. 35.

[3] Films from this series can now be procured from Holt, Rinehart and Winston, Inc., 383 Madison Avenue, New York, New York.

MORE LEARNING IN LESS TIME

Simulation, the critical-incidents process, single-concept treatment via repeater loops, random access or still more sophisticated processes, micro-teaching, and other uses of visual media must, it would seem, meet two criteria:

1. They must serve to build concepts and skills more effectively than older approaches
2. They must conserve time.

Evidence is beginning to exist that they are doing both of these things. Preliminary research findings in one of the M–STEP states seem to be pointing to the very strong hypothesis that senior students participating half time in micro-teaching activities and half the normal time in student teaching do equally as well on evaluative criteria and performance standards as do equated students who participate in the full term of student teaching.[4]

This evaluation of the time-saving effect of micro-teaching may be highly significant.

SHARPENING OUR FOCI ON THE BASIC COMPONENTS OF GOOD TEACHING

Before micro-teaching is started, instructors must decide what to micro-teach. If critical incidents are being used, someone must know what are the most crucial "incidents" that should be learned.

As an aid to micro-teaching, much has been done in many colleges and universities in an attempt to isolate the basic teaching skills and desirable terminal behaviors in teaching.

A few examples of skills in teaching which have been isolated and are being micro-taught can be mentioned.[5,6]

Probing: an intensive questioning technique.
Reinforcement: the teacher administers verbal and nonverbal rewards to students for effective participation.
The use of silence: e.g. after a student response or following a teacher's question.
Use of redundance skills in lecturing: e.g. using examples to emphasize terms, principles, and concepts.
Techniques used in teaching a concept.
Involving students in class discussion.
Using inquiry training.
Developing a sensitivity to interaction - pupil to pupil, pupil to teacher, etc.
Non-oral contributions to concept building.

The necessity for defining essential teaching skills for use in micro-teaching and simulation is beginning to be mentioned by some authors as possessing significant side effects. Important among these is the attendant awakening of teacher educators to the need for valid

[4] J. Hugh Baird, W. Dwayne Belt, and Lyal Holder, The Individualized Secondary Teacher Education Program at Brigham Young University (Salt Lake City, Utah, State Board of Education, 1968) p. 1.

[5] D. W. Allen and David B. Young, "Videotape Techniques at Stanford University", in Television and Related Media in Teacher Education, Edited by Howard E. Bosley and Harold E. Wigren (Baltimore, Maryland: Multi-State Teacher Education Project, 1967) p. 24.

[6] Utah M–STEP, op. cit., p. 2

analyses of the teaching process for use in course work generally. As a result, new and stronger emphasis is being placed on sets of skills, techniques, and procedures as these are being isolated by the media utilization effort. It is believed that a strong increase in virility, course effectiveness, and student interest is occurring as definable behavioral objectives from this source find their way into varied teacher applications of education curricula.[7]

CREATIVITY VERSUS IMITATION

Professional teacher educators have always been interested in means for stimulating creative attitudes on the part of teachers who go through their programs. Rarely, it would seem, have they been provided ready-made devices of such efficacy as is inherent in the video processes which have been described. We have always talked about creativity. Now we have an effective medium of assistance.

This is not to imply that we expect to avoid or that we decry the use of good teaching to supply guides and standards in programs of teacher preparation. Indeed, many of the video processes utilize model teaching procedure as the basis of their instructional thrust, on the assumption that beginning teachers will learn from observing quality performance. We have even added refinements such as single-concept treatment. The student teacher and the intern will continue to develop from contact with master teachers.

Nevertheless, we must face the fact that ineffective teaching processes can be and have been imitated and adopted by new teachers, despite all we might have said to them in the classrooms on the campus. The telling process has not been able to compete with what the neophyte teacher has seen during (a) his pre-college school experience, (b) his college experience, and (c) even his student teaching experience. Let's face that. Mediocrity can be perpetuated through emulation whether we speak of teaching or of some other profession.

Fortunately, and probably for the first time in history, through video processes we now possess powerful technological aids for developing effective teaching performance.

[7]Baird, Belt, and Holder, op. cit., p. 4.

DESCRIPTION OF A LARGE-SCALE MICRO-TEACHING PROGRAM*

by

Clark Webb, Hugh Baird, Dwayne Belt, Lyal Holder

Brigham Young University

The concept of micro-teaching probably qualifies as one of the three or four most provocative developments in teacher education, both preservice and inservice, of the last five years. Everyone, it seems, is either conducting micro-teaching sessions or preparing to initiate them within a short period of time. This paper describes the program of one university which provides for at least one micro-teaching experience for every student in the initial teacher education course. In this paper the term "micro-teaching" refers to a scaled down teaching act involving the use of a videotape recorder. It should be noted that micro-teaching may be accomplished and is, at Brigham Young University, without a videotape recorder.

Micro-teaching at Brigham Young University is defined as the creation of a miniature teaching situation under controlled conditions. All of the elements of the teaching act are present. The uniqueness of micro-teaching consists of two elements: (1) the ease with which the teaching situation can be controlled and manipulated and (2) the availability of immediate feedback for the student teacher, provided both through the recording and playback of the instructional sequence using a videotape recorder and through the critical comments of micro-students and the evaluator.

At Brigham Young University the initial professional sequence course in teacher education is entitled "Basic Concepts of Teaching," a two-semester-hour course taken, typically, by juniors and seniors preparing for either elementary or secondary teaching certification. Elementary and secondary sections of the course are taught separately. Unlike some universities which have a preservice teacher population of 100 students or less, Brigham Young University has in its "Basic Concepts of Teaching" classes alone over 700 students per semester.

For the fall 1967 semester, the course was restructured, and the following behavioral objective was included:

> Within a period of seven minutes, the preservice teacher will teach a single concept within his major or minor field, and evaluate whether or not it has been learned.
>
> An evaluation of the micro-teaching will be made in terms of: the desirability and effectiveness of the materials selected to show the referent; application of the learning sequence; the amount of student involvement; whether or not the concept was learned; whether students were caused to think above the lowest cognitive level; and on the voice, poise, and mannerisms of the teacher.

* Presented at Annual Convention, National Education Association, Department of Audiovisual Instruction, Houston, Texas, March, 1968.

The preservice teacher will write a summary of the suggestions made for improvement, those he would select for implementation, and the steps he would take to implement them.

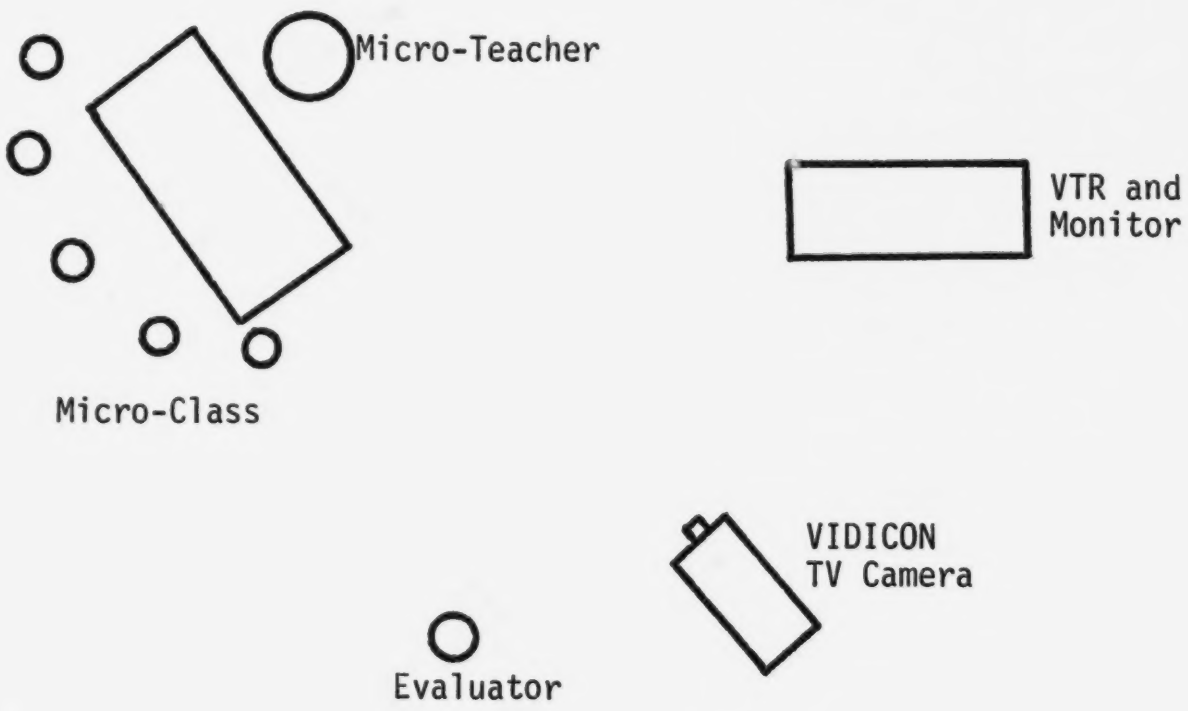
Minimal performance shall require that 75 per cent of the students taught shall have achieved the teacher's objective and learned the concept taught, and that students shall be caused to function *at least once above the lowest cognitive level.*

TYPICAL SESSION

To achieve the objective mentioned above, the Teacher Education 301 student schedules time (30 minutes per micro-teaching session) in the micro-teaching studio. He also arranges for three or four of his classmates to be present to act as the micro-class.

In the studio a physical arrangement is used similar to that illustrated by the diagram given below. This arrangement can be varied depending on the purpose of the session.

TYPICAL EQUIPMENT ARRANGEMENT FOR MICRO-TEACHING LABORATORY



The preservice teacher is prepared to teach a single concept (or psychomotor act) within six to eight minutes. The teaching act is intended to be a self-contained lesson and not simply the first six to eight minutes of a longer lesson. In the studio with the student teacher and the micro-class is the micro-teaching evaluator, who may be the instructor of the micro-teacher's "Basic Concepts of Teaching" class, another faculty member from the Teacher Education Department, or a trained graduate assistant. The evaluator also acts as the equipment operator.

As the micro-teacher presents his lesson, his performance is recorded on videotape. The evaluator observes critically the trainee's teaching effort and notes suggestions for improvement and commendations on an evaluation form.[1] At the conclusion of the lesson, the videotape is rewound and the members of the micro-class are given the same teaching evaluation form used by the evaluator. To begin the evaluation, the instructor-evaluator and the students discuss in a general, usually positive, way the student's performance. The evaluator may make suggestions about what to look for during the videotape playback. As the videotape is replayed, the micro-teacher, micro-class members, and evaluator review the teaching act and comment freely. If desired, a particular segment may be replayed, and also a "stop action" process may be used.

Recommendations are often made first by the trainee himself. Due to scheduling problems occasioned by the large number of students currently using the equipment, it is rare that a student is asked (or allowed) to reteach a lesson at the time. Some micro-teaching applications are able to accommodate reteaching.

It is appropriate to note here an objection which is sometimes voiced by educators who have heard of micro-teaching but who have not had direct experience with the method: "Doesn't the micro-teaching situation with its cameras, operators, on-looking peers, and impact of the playback generate psychological pressures which result in (1) an atypical teaching performance and (2) some form of defensive reaction to the anxiety produced?"

After two years and some 1,500 micro-teaching sessions, our answer would be "no" on both counts, with the following qualifications: The initial session may occasionally represent teaching behavior distorted somewhat by the micro-teacher's anxiety. Sometimes it is evident that the instructor needs to emphasize positive characteristics during the playback session to offset somewhat the student teacher's negative perception of his performance. The anxiety produced by the camera is quite similar to that produced during the first few days of teaching by an actual classroom full of students, but without risk to thirty students.

Typically, however, these problems are of such minor importance that we can effectively discount them.

EQUIPMENT, FACILITIES, AND LOGISTICS

At Brigham Young University two one-inch Sony model EV-200 videotape recorders and one, half-inch Concord model 600 are presently being used. Sylvania SC-12A cameras with room lenses and with top-mounted Sony 5-inch monitors are used. A 23-inch monitor on a movable cart allows a class of up to thirty-five or forty to view comfortably. Audio can be a headache, even when the micro-class is composed of only four or five persons. Generally, an audio mixer which allows feeding of a lavaliere microphone (teacher) and one or two stand microphones (class) into the videotape recorder is used. A single stand microphone placed between the teacher and the students has been used with limited success.

[1]The Brigham Young University Concept Teaching Evaluation Form is being tested and revised on a continuing basis. Copies may be obtained by writing to the authors, c/o Teacher Education Department, Brigham Young University, Provo, Utah 84601.

University policy requires that the Broadcast Services Department purchase all videotape equipment used by the university. Departments making extensive use of the equipment receive it on long-term loan from Broadcast Services. Maintenance is done by Broadcast Services personnel.

In addition to the education building on campus in which one set of equipment is housed, a section of a home owned by the university has been converted into a micro-teaching studio. Here the other Sony set and the Concord equipment are employed.

Providing some 730 micro-teaching sessions during a semester adds approximately 365 hours to an already heavy work load, since about 30 minutes of time per session is required. The logistical problems involved become apparent when one considers that, due to the necessity of providing preliminary and prerequisite experiences, the more than 700 micro-teaching sessions are scheduled only during the last ten weeks of the semester. The fall 1967 semester found the studio equipment in operation fourteen hours a day (7 a.m. to 9 or 9:30 p.m.) Monday through Friday and an additional five hours on Saturday mornings. Due to the extensive use of the education building for other university classes, the equipment housed there was used an average of three to five hours per weekday and five hours on Saturday.

As noted earlier, the evaluation of micro-teaching sessions was handled by faculty members and graduate assistants, the latter trained especially for this work. Inasmuch as regular class time was not used for micro-teaching with the videotape recorder, it was impossible for the students to schedule their micro-teaching only at times when their particular instructor was available to act as evaluator. Hence there was the need for three graduate students to assist.

EVALUATION OF EFFECTIVENESS OF PROGRAM

Student reaction to the micro-teaching experience has been both decided and positive. A random sample (N = 85) of the 730 students who micro-taught during the fall semester of 1967 indicates that almost nine out of ten of those who micro-taught at least once believed such experience indicated areas where they could make improvement. (See Table 1.) Seventy-five per cent of those in the sample said that it was "very true" or "somewhat true" that micro-teaching "changed my self-image as a teacher." Other conclusions drawn by the students can be seen by referring to the Table.

Table 1
EVALUATION OF MICRO-TEACHING EXPERIENCE
BY TEACHER EDUCATION 301 STUDENTS

N = 85

STATEMENT	*VERY TRUE*	*SOMEWHAT TRUE*	*SOMEWHAT UNTRUE*	*NOT TRUE*
Micro-teaching (including video taping) as a technique to evaluate my teaching:				
1. Changed my self-image as a teacher	35%	41%	20%	4%
2. Indicated to me areas where I can make improvement	88	9	3	0
3. Is not much more than just a novel experience	6	4	11	80
4. Could be easily replaced by other, more ordinary, experiences	6	7	10	78
5. Is embarrassing and discomforting	4	23	32	41
6. I would like more opportunities to be taped	58	24	6	12

Evaluating the learning activities provided in Teacher Education 301, 87 per cent of a random sample of students from three sections (N = 41) rated micro-teaching as "excellent." No other learning activity provided during the course was rated "excellent" by more than 37 per cent of the students. (See Table 2.)

Table 2

PERCENTAGE OF TEACHER EDUCATION 301 STUDENTS RATING SELECTED LEARNING ACTIVITIES AS "EXCELLENT"

N = 41

LEARNING ACTIVITY	*% OF STUDENTS RATING THE ACTIVITY AS "EXCELLENT"*
1. Micro-teaching with VTR	87
2. Writing behavioral objectives	37
3. Use of referent	37
4. Writing lesson plans	32
5. Working in team groups	27
6. Inquiry teaching	17
7. Class lecture-discussion	15
8. Inductive/deductive teaching	12

Additional information has been gleaned from those who evaluated the students. Their perception of the worth of the micro-teaching learning activity is seen in Table 3.

Table 3

EVALUATORS' PERCEPTIONS OF MICRO-TEACHING WITH TEACHER EDUCATION 301 STUDENTS

N = 7*

	VERY TRUE	*SOMEWHAT TRUE*	*SOMEWHAT UNTRUE*	*NOT TRUE*
1. I perceived the students who micro-taught as having positive feelings toward this experience.	6**	1		
2. One micro-teaching experience seems to be sufficient for our purposes.			4	3
3. The time, effort, and expense necessary to provide each Teacher Ed. 301 student with one micro-teaching experience is justified.	6	1		
4. The degree of similarity between the micro-teaching experience and the real public school classroom is high.	2	5		

* These seven evaluated more than 98 per cent of the 730 sessions conducted.
** Actual number of responses, not percentages.

CONCLUSION

The highly favorable experimental evidence generated at Stanford University and other institutions where micro-teaching has been used is substantiated by the Brigham Young University results in providing the experience to large numbers of beginning elementary and secondary education majors. The concern at Brigham Young University is with the question, "How can we increase the micro-teaching experiences for preservice teachers," not with the already-answered question, "Does it help."

James Russell, former chairman of the Educational Policies Commission of the National Education Association, recently wrote:

> Pre-service education of teachers offers little hope (of providing innovative teachers) because the student is not engaged in actual practice of his profession and hence is usually unable to understand the changes of self-image which are implicit in the things he may be learning. In other words, his learning is verbal only, unrelated to practice. [2]

At Brigham Young University micro-teaching is seen to be a beginning solution to the dilemma posed by Dr. Russell.

[2] James E. Russell, Change and Challenge in American Education (Boston: Houghton, Mifflin Co., 1965), pp. 94–95.

SUPER 8MM CARTRIDGE FORMAT FOR TEACHING EPISODES*

by

Clark Webb, Hugh Baird

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(The investigation reported herein was undertaken pursuant to a contract between Brigham Young University and the Utah State Board of Education.)

As teacher educators sense more and more strongly the need to provide for their learners appropriate models of desirable teaching behavior, they seek (with proportionately increased motivation) materials which help them to provide such learning experiences.

Videotape and film technology offer exciting (if expensive) ways to meet this growing need. This paper presents the results of a limited investigation into the potential of a super 8mm cartridge film for brief (3–10 minute) model teaching episodes.

A good deal of uncertainty pervades the film technology field. New technical developments are changing the capabilities and potential of film to such an extent that some equipment manufacturers seem to be waiting before they commit themselves to a particular level of product development. Two current areas of uncertainty which one investigating this field must take into account are (1) sound track on film -- shall it be optical or magnetic and (2) film size -- shall it be 8mm or super 8mm. The trend seems to be increasingly toward super 8mm. (We have not considered 16mm films in this paper.)

With the realization, then, that the information presented in this paper may be out of date by the time the ink dries, there follow data on processes and products.

ABOUT FORMATS

Here is an instructional situation common, probably, to most institutions of teacher education: In a methods class the professor is attempting to help his students, let us say, more effectively frame and use questions. Not satisfied with simply talking about the use of questions, he models for the class appropriate question-asking behavior. Not satisfied with this alone, either, he has the students engage in this behavior themselves. As he observes their problems, he wishes he had Teacher X in the room so that he might have him present one part of that first-rate lesson using questions effectively which he saw X teach the other day.

* Presented at Utah M–STEP (Multi-State Teacher Education Project) Conference. College of Southern Utah, Cedar City, Utah, May 24, 1968.

Special thanks are due to Don Bishop, a graduate assistant in the Teacher Education Department, for his help in gathering data on processing techniques and costs.

It is at this point that our professor will be interested in an instructional aid which will allow his students to observe briefly the target behavior. Three (of several) solutions to the problem of the absence of Teacher X are: (1) videotape a portion of X's lesson, bring the videotape recorder and a monitor into the classroom; (2) videotape the lesson, have the tape transferred to 8mm (or super 8mm) sound film and use it in a cartridge projector (see next section); (3) film directly with a synchronized sound super 8mm camera and put film in cartridge form (see next section); and (4) videotape the lesson, have a 16mm kinescope made and use it in a 16mm projector. The first solution is a method that has been used at a number of institutions for some time. It is, however, becoming more and more difficult to justify tying up $2,000–$3,000 worth of videotape equipment to show a class a five- to ten-minute episode of teaching. The second and third solutions seem to hold promise as ways to make short teaching episodes accessible in the classroom.

Cartridge film projectors allow "packaging" of a filmed presentation from two or three minutes to 30 minutes long on a continuous loop of 8mm or super 8mm film. The film never needs to be threaded or rewound by hand. Both silent and sound models are available, the sound produced on either a magnetic or optical track. The difference between the two methods of sound production (at least as far as the educational consumer is concerned) seems to be relative permanence of the sound track. A magnetic sound strip, since it is a piece of material bonded to the film, conceivably could become unfastened. Also the magnetic sound may be erased -- either intentionally or unintentionally -- and a new sound track recorded. Optical sound is part of the film itself and consequently is permanent.

PROCESSES AND EQUIPMENT

Solution two (above) involves the transfer to film of videotape and packaging the film in a cartridge. Typically the processor (see Appendix B for representative companies) makes a 16mm kinescope from the videotape (although this step may be by-passed), reduces it optically to 8mm or super 8mm, adds sound, and places the resultant filmed episode in a cartridge. The quality of the film in our experience has been high, even when the original was a one-inch videotape from a portable helical-scan videotape recorder. If the 16mm negative is obtained, additional prints (8mm or 16mm) can be made from it. If a direct process (by-passing 16mm copy) is used, additional prints are normally not obtainable since standard practice in the industry is to not copy 8mm to 8mm. Costs of this service, as well as costs of selected pieces of equipment, are given in Appendix A.

The projectors for which film is processed in this manner are of widely varying design and capability. Either rear-screen or front-screen projection (or both, on some models) is available and, as noted earlier, sound or silent models are available.

The other solution proposed to our professor's dilemma was to film a portion of his friend's lesson directly with a sound-on-film super 8mm camera and put the resultant episode in a cartridge. The camera that will do this is a new development which has been marketed only for a few months (see Appendix B for name and address of supplier). The company producing this camera claims that the unit provides lip-synchronized sound on super 8mm film. We have used the camera but, as of the writing of this paper, have not received from the company's processing lab

the completed film with magnetic sound strip. A potential drawback to this equipment -- from the standpoint of an educational consumer -- is the difficulty of making additional copies of the final product. Also there are problems (not insuperable) in shooting a scene longer than a standard 50-foot roll of super 8mm film (the camera does not require special film), which runs two and one-half minutes. If one camera is being used, the cartridge roll of film must be extracted from the camera and a new one inserted at the end of each two and one-half minute interval.

SUMMARY

As educators of teachers depend less on their own use of words to provoke learning in their students, they increasingly seek convenient methods of providing the *referent* of the concept they are teaching. Videotaped or filmed episodes of teaching which model an intended behavior provide one way of doing this. The super 8mm cartridge format appears to provide an accessible, easily manipulated product to assist the teacher educator.

Appendix A

SOME APPROXIMATE COSTS

Transfer 1/2" or 1" videotape to super 8mm film with sound	$11.50 – 12.00/minute
cost of cartridges	$ 5.00 – 10.00/each
additional super 8mm prints	$ .10 – .20/foot
Audio Motion Pictures sound-on-film super 8mm camera, including tape recorder	$400.00
film processing for AMP super 8mm film	$ 1.85/roll (50')
sound processing for AMP super 8mm film	$ 2.85/roll (50')
processing for cartridge	$ 3.00/roll (50')
Cartridge projectors	
Fairchild Mark IVS (super 8mm, magnetic sound, rear screen projection	$485.00
Fairchild Series 400 (regular 8mm only, front or rear screen projection)	$480.00
Technicolor 1000 (super 8mm, optical sound, front screen projection	$300.00

Appendix B

NAMES AND ADDRESSES OF REPRESENTATIVE PROCESSORS and MANUFACTURING COMPANIES

FILM PROCESSORS:

1. Advanced Film Reproductions, Inc.
   155 West 46th Street
   New York, New York 10036
   (videotape to film transfer)

2. W. A. Palmer Films, Inc.
   611 Howard Street
   San Francisco, California
   (videotape to film transfer)

3. Vidtronics (a Division of Technicolor)
   823 North Seward Street
   Hollywood, California 90038
   (videotape to film transfer)

HARDWARE SUPPLIERS:

1. Audio Motion Pictures, Inc.
   212 Sutter Street
   San Francisco, California 94108
   (The AMP "Talking Picture" movie camera)

2. Fairchild Industrial Products
   221 Fairchild Avenue
   Plainview, Long Island, New York
   (cartridge projectors)

3. Technicolor
   Box 38–547
   Hollywood, California 90038
   (cartridge projectors)

DEVELOPING A STATE'S RESOURCES FOR TELEVISION IN TEACHER EDUCATION

George W. Hopkins, Director

Office of Teacher Education and Certification

State Department of Education, South Carolina

South Carolina has worked with the six states of Maryland, Michigan, Florida, Utah, Washington, and West Virginia in a compact designed to improve teacher education programs, especially in the area of student teaching experiences. Each of these states has a unique program designed to meet its own particular needs and problems.

PROBLEMS OF SOUTH CAROLINA M–STEP

The problems of South Carolina M–STEP were in general related to operational aspects of the project. The first problem encountered was the need to translate the broadly stated objectives into specific objectives and plan for the project activities relating to these specifics. This problem was encountered and solved by the cooperative effort of the State Steering Committee and the M–STEP staff members.

The second problem related to the dissemination of produced television resources and this continues to be a problem. The state ETV network has been most cooperative in broadcasting the programs when they have had the available broadcast time, but the air time they have available is usually not the most convenient hour for the colleges. This problem has in turn increased the interest in portable videotape recorders, and it is foreseen that each institution will have at least one such machine in the near future. The acquisition of portable video equipment by the colleges and the willingness of South Carolina ETV to make copies of M–STEP videotapes for use on the college equipment should help in part to overcome this problem.

The third problem was one of "too few to do too much." This problem is related particularly to dissemination. Although many publications have been produced which list and explain the M–STEP resources, personal visitation by the M–STEP staff to each institution involved in student teaching would have been beneficial, especially near the close of the project. Unfortunately, this was not possible.

CONDITIONS ESSENTIAL FOR SUCCESS

A major condition which led to the success of M–STEP in South Carolina was the recognized need on the part of the state's twenty-two teacher preparation institutions for more and better communication and exchange of information. Under the auspices of M–STEP, a dialogue was begun to assess the educational needs of "student teachers" in particular and to define the role which M–STEP and college and public school personnel cooperatively could play in meeting these needs.

A second condition which facilitated M–STEP success was the desire among professional educators in South Carolina for the State Department of Education, and most particularly the Office of Teacher Education and Certification, to assume a strong leadership role in student teaching. The assumption of such a role has contributed, in part, to a change in self-concept of the State Department.

The third condition related to the technological facilities of educational television available to M–STEP. The education and production departments of South Carolina ETV wholeheartedly supported M–STEP in every way.

A fourth condition relating to M–STEP success is the acute problem of qualified teachers in South Carolina.[1] Thus the need to recruit and well-qualify those enrolled in student teaching programs is increased.

The fifth condition facilitating M–STEP success was the increased interest on all educational levels in the utilization of television in education. The traditional approach to the classroom is being joined by television instruction in both preservice and inservice teacher education.[2]

M–STEP COMMITTEES

Basic to the success of M–STEP in South Carolina were the committees, both existing and newly formed, which served in an advisory and working capacity to the project.

The first of these groups was the Teacher Education Council of South Carolina, which is constituted of professional educators to consider problems concerning teacher education and certification and to make recommendations to the Office of Teacher Education and Certification to be considered by the State Board of Education concerning both present and proposed programs of teacher education. This group served in an advisory capacity.

The second group to be involved was the Steering Committee of M–STEP, organized early in the project to help decide objectives, priorities, and procedures. Out of this five-member group and other educational personnel from across the state came the subcommittee charged with the responsibility for the development of a *Handbook for Student Teaching.*

As plans for developing a series of videotapes proceeded, the need for additional direction from the steering committee and other educational and technical sources became evident. The necessity for careful and continuous planning by project staff members in the production of videotapes resulted in the need for greater involvement and cooperation by many persons from colleges, public schools, professional organizations, and educational television. This direction was both desirable and essential in the making of good quality tapes.

To make possible the production of videotapes in student teaching which would result in improved teacher education programs, it was recommended that the Steering Committee from

[1] South Carolina State Superintendent of Education, Annual Report, 1965–1966 (Columbia: South Carolina State Department of Education, 1966), p. 83.

[2] In 1967, over 2,000 South Carolina teachers enrolled in inservice teacher education projects of the Office of Teacher Education of the State Department, utilizing television as the medium of instruction.

institutions of higher education be expanded to include representatives from public schools and educational television. The new Advisory Committee consisted of thirteen members, exclusive of the project staff. It was felt that such a committee, representing administration, curriculum, methods, educational psychology, instruction, elementary, secondary, several teaching areas, student teaching, and educational television would provide the breadth and depth needed to guide the project in the production of good videotapes.

THE STRUCTURE OF SOUTH CAROLINA M–STEP

In South Carolina, M–STEP is an integral part of the Office of Teacher Education and Certification and relates directly to the function and activities of that office, while at the same time extending the scope and degree of leadership of the office. The creation of M–STEP made possible added personnel for the state department to assist in teacher education activities.

External to the State Department of Education organization were the M–STEP Steering and Advisory Committees and the South Carolina Association for Student Teaching providing advice to the M–STEP project as it produced a *Handbook for Student Teaching* and a series of ten videotapes dealing with significant aspects of student teaching.

SOUTH CAROLINA M–STEP UTILIZES DIVERSE PROCESSES TO CARRY OUT ITS OBJECTIVES

In the M–STEP program, the State Department of Education attempted to involve on a gradually increasing scale those persons from institutions of higher education, public schools, and professional education groups who were directly concerned with teacher education programs. Regional meetings throughout the state with college personnel provided the initial basis for dialogue related to the organization of the project and identification of areas in teacher education programs about which there was consensus of real need for improvement. Through this statewide involvement of educators, South Carolina has witnessed an increase in intrastate cooperation among and between colleges, public schools, the Association for Student Teaching, ETV personnel, and other professional education groups.

South Carolina M–STEP has served on the interstate committees for Florida, Maryland, Michigan, Utah, Washington, and West Virginia M–STEP efforts.

South Carolina is blessed with the nation's most comprehensive statewide ETV facilities. M–STEP utilized both the production and distribution capabilities of South Carolina ETV in producing and broadcasting ten videotapes.

Throughout the project, M–STEP sponsored interstate and intrastate conferences, utilizing well-known consultants and M–STEP personnel in other states. Such conferences have centered around the utilization of media in teacher education and interaction analysis as used in the classroom.

The M–STEP staff has conducted extensive visitations across the state to consult, encourage, and promote the utilization of resources produced by South Carolina M–STEP.

SOUTH CAROLINA M–STEP PRODUCES RESOURCES FOR TEACHER EDUCATION PROGRAMS

HANDBOOK FOR STUDENT TEACHING

Published in July, 1967, the *Handbook for Student Teaching* was eagerly received across South Carolina. The distribution of this significant publication was directed at three major groups in the state:

1. Each teacher preparation institution in South Carolina received an initial mailing of fifty copies to be distributed among its faculty and those involved in its teacher preparation program at any level.
2. All public school personnel involved in teacher preparation, including superintendents, principals, and cooperating teachers.
3. All professional education organizations at the state and the local level.

As requests for additional copies have been received, the pattern of securing a copy for each "student teacher" is becoming clear. Once again, the role of M–STEP as a vehicle for change and leadership can be evidenced in the field of teacher education, as the twenty-two widely divergent programs of teacher preparation in the state are being influenced by a publication of the State Department of Education and the Multi-State Teacher Education Project.

The M–STEP staff was involved in widespread visitation to discuss with educators the *Handbook for Student Teaching* and methods for successful implementation of its principles in teacher education programs. The visitation involved each teacher preparation institution in the state, public school personnel, and the six Title III Regional Education Centers.

MULTI-STATE TEACHER EDUCATION PROJECT TELEVISION RESOURCES

In South Carolina, the M–STEP efforts were directed toward the use of video processes in teacher education. Due to the extensive educational television facilities present in the state, a series of ten videotapes concerned with significant aspects of student teaching was produced.

These tapes endeavor to portray vividly and realistically some of the basic principles and theories prevalent in student teaching and were not intended to replace effective patterns and procedures now in use in the colleges and public schools but rather to enrich and complement in a very meaningful way the best in teacher education programs. Each tape is complete in itself and may be used at any appropriate stage in the preservice program of a prospective teacher. The areas covered by the tapes are not exclusive or all inclusive. Neither are they presented as the absolute ideal in technique or example. Instead, they are designed to foster and stimulate discussion by those concerned with improving preparation programs. Study guides for use by colleges, public schools, and student personnel are available to accompany the tapes.

The following tapes and accompanying study guides have been prepared and are available for use in a local situation on closed circuit facilities, on the ETV open circuit channel in the area, or on appropriate portable equipment:

1. *Lesson Planning . . . Is It Necessary?*

   This thirty-minute videotape shows a class of student teachers as they have returned from their internship, discussing with their professor their findings on the importance of a lesson plan in light of their recent classroom experiences.

2. *The Teaching Unit*

   This thirty-minute videotape is a post-directed classroom discussion between student interns and their professor. The students have just completed their student teaching experience and are relating the principles of the teaching unit to their work as student teachers.

3. *Evaluation in Student Teaching*

   Evaluation in student teaching proceeds along many lines, both in the kinds of processes employed and in the types of instruments used. This thirty-minute videotape is one example of a form of self evaluation employed by student teachers. This self evaluation and evaluation by the education professor is the culmination of experiences gained by each student through the use of a Pupil Inventory Form in planning for and working with pupils during the student teaching experience. The student teachers discuss the problems they encountered and evaluate their performance in solving these problems.

4. *Using Video Processes in Teaching*

   Two thirty-minute tapes illustrate ten use categories for television in teacher education. Each tape is structured to illustrate five categories, with an introduction to each illustrative segment. This tape is an attempt to show practically the utilization possibilities of television in the preparation and inservice education of teachers and in the daily teaching tasks of the full-time teacher.

5. *Empathy in Student Teaching: Its Relation to Effective Learning*

   Two thirty-minute observations showing the classroom experience of a young student teacher.

6. *Vitalize Your Teaching through the Use of Media*

   A thirty-minute tape produced by South Carolina M–STEP and Bob Jones University, showing the impact that can be made by the effective utilization of audiovisual materials in teaching.

7. *A Day in the Life of an Intern*

   This thirty-minute videotape with film attempts to portray some of the significant activities of an intern teacher. The intern teacher is working under a special program in Sumter, South Carolina, School District Seventeen, as a part of a pilot project designed to prepare National Teacher Corps interns for successful teaching careers.

8. *Roles in Student Teaching*

   This thirty-minute tape attempts to visualize contemporary theory about selected aspects of the role, relationship, and responsibility considered significant for each of the following as they are involved in student teaching: student teacher, pupils, the cooperating or supervising teacher, college supervisor of student teaching, other college personnel, the principal, the superintendent, and other local school personnel.

COROLLARY PUBLICATIONS

In addition to the videotapes and accompanying study guides and the *Handbook for Student Teaching,* South Carolina M–STEP produced the following:

1. "Commitment to Improvement in Teacher Education through M–STEP." A descriptive brochure for the first three tapes produced by South Carolina M–STEP.
2. "Multi-State Teacher Education Project." A monthly newsletter. October, 1967 – February, 1968.
3. "Teacher Education Resources." A list of materials developed by South Carolina M–STEP and the Inservice Teacher Education Project. March, 1968.

AN APPRAISAL

by

Howard E. Bosley

What do we now know about the effectiveness of television and related media in teacher education? How significant is the use of media in teacher education programs?

The fact should be re-emphasized that M–STEP was designed as a developmental agency, concerned with utilizing innovative procedures and techniques which, in the judgment of professional groups, seemed to possess merit. Operationally the task of the M–STEP project was to use discriminatory judgment in the selection of new techniques which would be incorporated into its state programs, to be inventive in the design and application of processes which can apply to teacher education, and to organize state and interstate systems whereby professionals in teacher education, through communication, collaboration, and creative group thinking can assess the efficacy of current patterns and adopt or evolve new patterns.

TEACHER EDUCATORS SPEAK

Personnel in the M–STEP states believe applications of instructional media can exert a strong influence on the improvement of teacher education. In referring to the effect of media on programs of teacher education, T. H. Bell, State Superintendent of Public Instruction in Utah, writes:

> Evidence of progress is already apparent. Microteaching and other uses of the videotape recorder are indicative of significant changes that are taking place in the preparation of teachers. But we have witnessed only the beginning! Seeds have been sown which could result in a major overhaul of teacher education programs. [1]

N. Blaine Winters, Administrator, Teacher Personnel, Utah State Board of Education, states:

> The M–STEP Project . . . has had a great effect upon developing new practices in student teaching in this and the other states. The use of instructional media, especially television, has been explored and accepted as an important factor to be used in improving student teaching. [2]

George W. Hopkins, Director, Office of Teacher Education and Certification, South Carolina State Department of Education, says:

> The M–STEP Project has had a great impact upon student teaching in South Carolina. It has caused a focus on new ways to attain the objectives of student teaching. The use of television, closed circuit broadcast, and videotapes has been extensively explored. All colleges and universities now use one or more of these in their teacher preparation programs. [3]

[1] Utah M–STEP, The Use of Video Processes in Teacher Education, Monograph No. 1 (Salt Lake City: Utah State Board of Education, 1967), p. i.

[2] Ibid., p. ii.

[3] South Carolina State Department of Education, Office of Teacher Education and Certification, Teacher Education Resources (Columbia: South Carolina State Department of Education, 1968).

UTAH'S EVALUATION SESSION

An evaluation of Utah's M–STEP Project was made during the state conference on May 18–19, 1967, at Salt Lake City. Representatives from Utah colleges and universities, local school systems, professional organizations of teachers, the state department of education, and representatives from other states attended the conference.

When asked how M–STEP had influenced teacher education programs in Utah, participants made the following references to achievements in exploring the potentials of video media. They asserted that M–STEP had encouraged the use of videotape and other media in teacher education, as well as the use of micro-teaching as a technique. They said that M–STEP had made available videotapes, films, and other materials to extend laboratory experiences and had stimulated earlier orientation of prospective teachers through videotaped episodes.

Participants said that they now foresee more innovative and creative uses of the television medium, as well as expansion of inservice opportunities through the use of this medium.

Asked what M–STEP could now do to improve preservice and inservice education of teachers, the group suggested the following activities related to the use of video:

Develop a descriptive list of behavioral objectives (teaching tasks)

Make available on videotape models of various teaching behaviors or performance for analysis and comparison

Produce single-concept tapes or films

Produce simulated, open-end tapes for use in teacher education

Plan workshops for college supervisors and cooperating teachers on use of new media.

The Utah discussion group foresaw additional influences of video processes on teacher education programs as follows:

1. increased use of media to develop desirable teacher behaviors
2. improvement of the teacher's self-image through the utilization of media
3. more innovative and creative uses of the television medium
4. developing an increased importance of technology in teacher education programs
5. development of a more analytical and diagnostic approach to student teaching.

INSTITUTIONAL RESEARCH

Dr. Lillian C. Smith conducted a research study dealing with the effectiveness of micro-teaching on the six teaching skills listed below:[4]

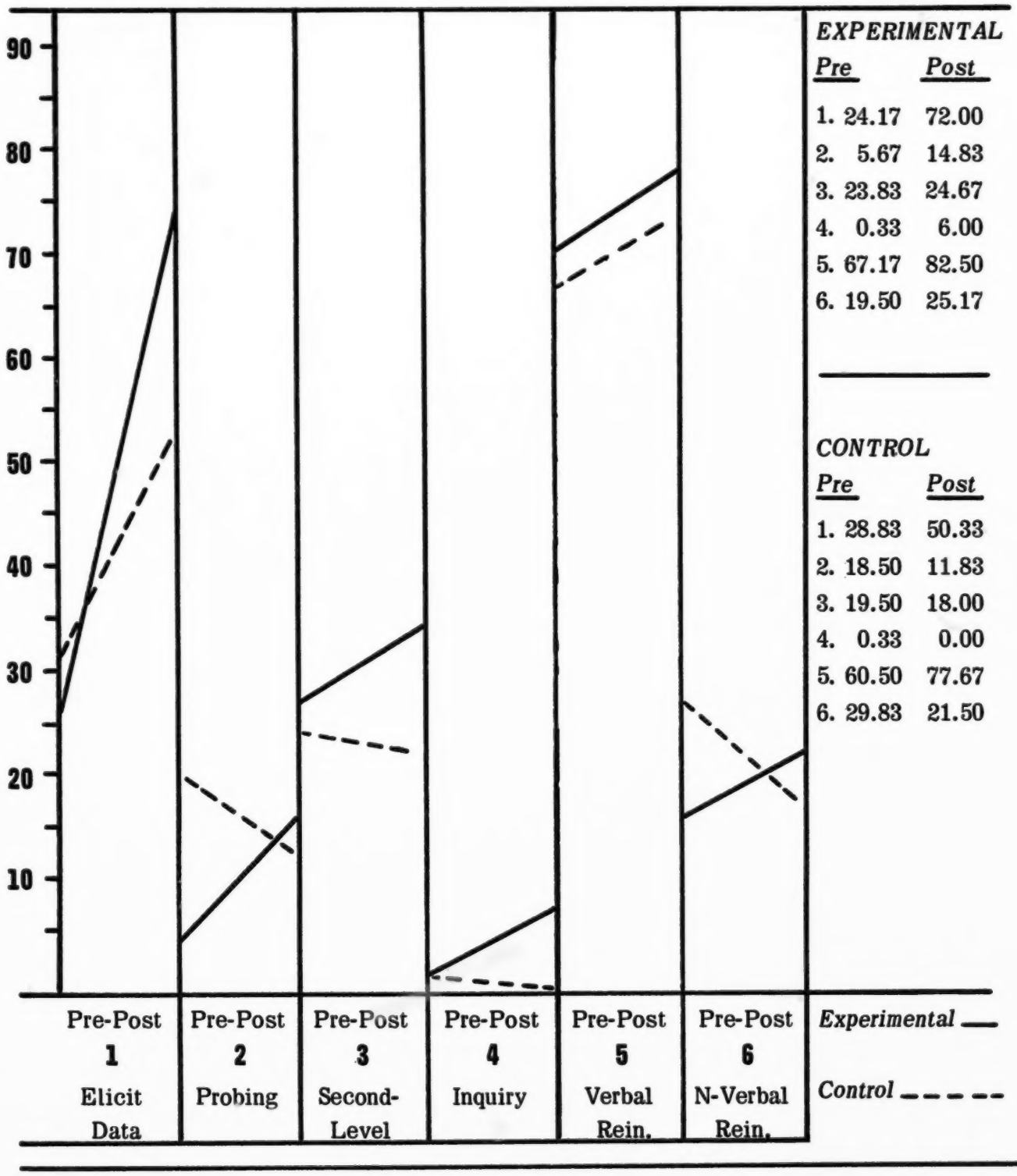
1. data eliciting (questioning) techniques
2. probing (questioning) techniques
3. asking inferential questions
4. inquiry
5. verbal reinforcement
6. non-verbal reinforcement

Dr. Smith says that "seeing oneself in a teaching situation enhances the ability to critically evaluate and constructively modify one's teaching actions. The fact that five of the ex-

[4] Lillian C. Smith, A Study of Micro-Teaching in the Preparation of Elementary Teachers, MS, (Baltimore, Maryland: Multi-State Teacher Education Project, 1968), figure 1.

Figure I

GRAPHIC REPRESENTATION OF THE MEANS OF THE FREQUENCY COUNTS



EXPERIMENTAL

	Pre	*Post*
1.	24.17	72.00
2.	5.67	14.83
3.	23.83	24.67
4.	0.33	6.00
5.	67.17	82.50
6.	19.50	25.17

CONTROL

	Pre	*Post*
1.	28.83	50.33
2.	18.50	11.83
3.	19.50	18.00
4.	0.33	0.00
5.	60.50	77.67
6.	29.83	21.50

Source: Lillian C. Smith, A Study of Micro-Teaching in the Preparation of Elementary Teachers, MS.

perimental group's skills showed gains over the control group lends support to the notion that a desired teaching behavior is more easily produced after viewing one's own teaching performance."

Among significant conclusions of the study were:

1. Student teachers appeared to have some facility in the use of data eliciting (questioning) techniques, and in the use of verbal reinforcement at the beginning of the study.
2. The use of micro-teaching is justified. If used in conjunction with other effective procedures which are known to influence teaching behavior, the results could be highly encouraging.
3. Students who took part in the micro-teaching process made much larger gains than the control group in mastering questioning techniques for gathering data.
4. A moderate degree of superiority was developed by the experimental (micro-teaching) group in asking probing questions, inferential questions, inquiry, and in verbal and non-verbal reinforcement. Students who were not involved in micro-teaching showed deterioration in four of the six skills studied (See Figure I).

Miss Smith also says,

"Some kinds of growth not defined as measurable in the study were noted in personal grooming, correct use of grammar, skill in dealing with others and 'sparkle' in presentation of lessons. No one in the experimental group failed to improve in voice control for instructional purposes."[5]

In calling attention to the fact that most studies of micro-teaching have been concerned with secondary school or college teaching, the author expresses the belief that " . . . a technique which seemingly has so much potential ought also to be useful in elementary teacher preparation where skills and mastery of content are so interdependent."[6]

Dr. Earl Harmer reports on developments in micro-teaching at the University of Utah during 1967–1968, after more than two years of trial.[7] As a result of this experience, several developments and recommendations have been summarized.

1. Micro-teaching procedures are an established part of the teacher education program at the University.
2. All personnel with the Department of Education are conversant with micro-teaching techniques and skilled in the use of video recorder equipment.
3. Micro-teaching techniques are being used in inservice education with local school districts.
4. The use of "real" students has been added to, but has not replaced, peer-groups as teaching subjects in the micro-teaching sequence.
5. Numerous departments outside the College of Education have either utilized micro-teaching or expressed an interest in potential use.
6. Micro-teaching clinic rooms should be developed which as nearly as possible are representative of the best K1-12 grade classrooms.
7. A valid and reliable code for the analysis of teaching constitutes the most crucial current need.
8. Sophisticated research and evaluation of micro-teaching is necessary.

[5] Ibid.

[6] Ibid.

[7] Earl W. Harmer, Jr., A Report of Micro-Teaching Curriculum and Development at the University of Utah, 1967–1968, MS, (Salt Lake City: University of Utah, 1968).

A Brigham Young University paper[8] presents a very interesting statement:

"The concern . . . is with the question, 'How can we increase the micro-teaching experiences for preservice teachers' not with the already-answered question 'Does it help'."

Preliminary research findings at Brigham Young University point strongly to the possibility that micro-teaching experiences may soon evolve to the point where the total time spent in student teaching can be reduced. Evidence now in hand seems to indicate it is likely that micro-teaching processes will more than compensate for a general reduction in time allocated to student teaching.

[8] Clark Webb, Hugh Baird, Dwayne Belt, and Lyal Holder, Description of a Large Scale Micro-Teaching Program, p. 7.

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